

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 September 2005 (09.09.2005)

PCT

(10) International Publication Number
WO 2005/083488 A1

(51) International Patent Classification⁷: **G02B 13/16**,
13/18

(21) International Application Number:
PCT/US2004/004801

(22) International Filing Date: 19 February 2004 (19.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **THOM-
SON LICENSING S.A.** [FR/FR]; 46 Quai A. Le Gallo,
F-92648 Boulogne (FR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **HALL, Estill, Thone,
Jr.** [US/US]; 9978 Niagara Drive, Fishers, IN 46038 (US).

(74) Agents: **TRIPOLI, Joseph, S.** et al.; 2 Independence Way,
Suite #2, Princeton, NJ 08540 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

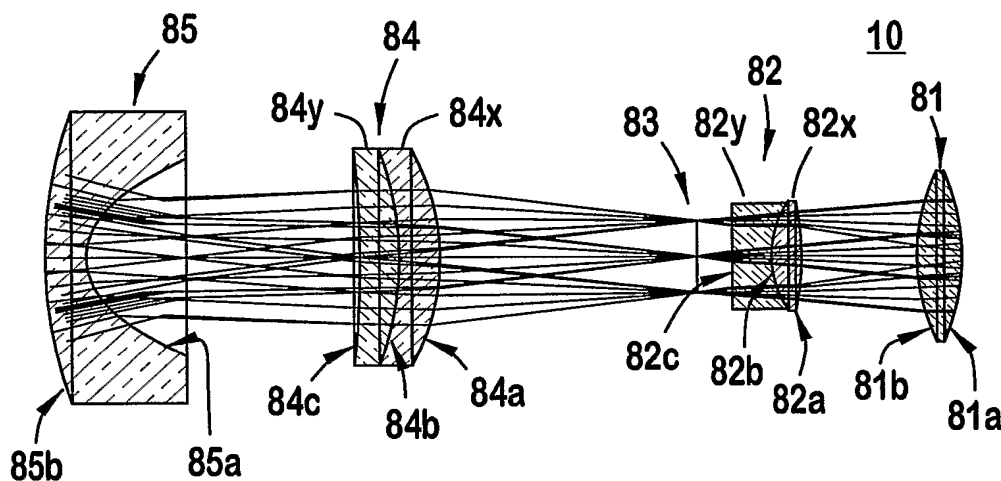
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: A ROBUST FAMILY OF MICRODISPLAY PROJECTION LENSES



(57) Abstract: The present invention provides a projection lens system comprising a double-gauss architecture with aspheric lens elements at the beginning and end of the lens system with a system stop therebetween and an acromatic lens element pair between each aspheric lens and the system stop. Also provided is a projection lens family comprising a plurality of lens systems, each having a double-gauss base architecture with aspheric lens elements at the beginning and end of the lens system with a system stop therebetween and an acromatic lens element pair between each aspheric lens and the system stop. Each lens system is optimized to provide a different cost/performance option.

WO 2005/083488 A1